

REMARKS

Claims 1-33 are pending in the subject application.

Claims 1, 6, 13, 17, 24 and 29 have been amended to further define the invention by specifying that the irradiation source is through a beam. Support for this amendment is found throughout the specification, for example, in paragraphs [0010], [0016], [0033], [0048], [0059], [0061] and [0065]; and in claims 6 and 17. Claims 7-9 and 18-20 are canceled, without prejudice. No new matter is added.

As a result of the amendments above, claims 1-6, 10-17 and 21-33 are now pending.

Applicants request reconsideration of the pending claims in light of the following remarks.

Rejection Under 35 U.S.C. § 102:

Claims 1, 5, 6, 11-17 and 22-33 were rejected under 35 U.S.C. § 102(b) as being anticipated by Foster et al (US 6,054,248; hereinafter Foster) for reasons recited from page 2 to page 9 of the Final Office Action (hereinafter Office Action). Applicants respectfully traverse this rejection on the following basis.

To anticipate a claim, a single source must contain all of the elements of the claim. Applicants submit that Foster does not disclose all of the elements of applicants' amended claims 1, 13, 24 and 29.

For instance, Foster does not disclose a method comprising beam irradiating the blended or prepared material coated on the substrate as in amended claims 1 and 13, or forming an underlayer by beam irradiating the blended or prepared material coated on the substrate as in amended claims 24 and 29, to cure (crosslink) the polymer composition to form the underlayer.

Instead, Foster, as stated in the Office Action, discloses thermally curable polymer composition that comprises hydroxyl-containing polymers (see, Office Action at page 2). In other words, Foster does not disclose a method of forming an underlayer comprising beam-irradiating materials on the substrate. Accordingly, Foster does not disclose applicants' amended claims 1 and 13, *inter alia*, a method comprising beam irradiating the blended or prepared material coated on the substrate, or applicants' amended claims 24 and 29, *inter alia*, a method

comprising forming an underlayer by beam irradiating the blended or prepared material coated on the substrate, to cure (crosslink) the polymer composition to form the underlayer.

For at least the above reasons, applicants respectfully submit that Foster does not anticipate applicants' claims 1, 13, 24 and 29. Because claims 5, 6, 11 and 12 depend on base claim 1 and claims 14-17, 22 and 23 depend on base claim 13, claims 25-28 depend on base claim 24, and claims 30-33 depend on claim 29, applicants respectfully submit that Foster also does not anticipate claims 5, 6, 11, 12, 14-17, and 22-33.

Accordingly, applicants respectfully request the Examiner to reconsider and withdraw the rejection to claims 1, 5, 6, 11-17 and 22-33 under 35 U.S.C. § 102(b) as being anticipated by Foster.

Rejection Under 35 U.S.C. § 103:

Claims 2-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Foster in view of Schaedeli et al (US 6,146,793; hereinafter Schaedeli) for reasons recited at from page 9 to page 10 of the Office Action. Applicants respectfully traverse this rejection on the following basis.

As discussed above, Foster does not anticipate amended claim 1 of the present invention. Applicants submit that Schaedeli does not cure the deficiency in Foster to lead a person skilled in the art to come up with claims 2-4 of the present invention.

The prior art references or combination of references must teach or suggest all the limitations of the claims. Here, Foster in combination with Schaedeli does not teach or suggest all the limitation of the present claims. Foster discloses a thermally curable polymer composition comprising a hydroxyl-containing polymer. Foster does not teach or suggest applicant's methods of forming an underlayer of a bi-layer resist film comprising, *inter alia*, beam irradiating the blended material coated on the substrate, as in applicants' amended claim 1.

Schaedeli does not cure the deficiencies in Foster. Schaedeli discloses a terpolymer and a method of making it. The Office Action stated that Schaedeli teaches phenolic resin in the undercoat layer such as novolak resin (see, Office Action at top of page 10). To form the phenolic resin, Schaedeli discloses generating acid under actinic radiation of about 193 nm. Schaedeli does not teach or suggest using beam irradiation to cure the polymer composition, and

therefore do not add to Foster's deficiencies in arriving at applicants' amended claim 1. The combination of Foster and Schaedeli would instead lead a person skilled in the art to use actinic radiation to irradiate coated substrate, and do not teach or suggest applicants' amended claims 1 and 13, *inter alia*, a method of comprising beam irradiating the blended (or prepared) material coated on the substrate. Accordingly, applicants submit that applicants' amended claim 1 is patentable over Foster in view of Schaedeli. Further, applicants submit that their claims 2-4, which are dependent on base claim 1, are also patentable over Foster in view of Schaedeli.

Accordingly, applicants respectfully request reconsideration and withdrawal of the rejection to claims 2-4 under 35 U.S.C. § 103(a) as being unpatentable over Foster in view of Schaedeli.

Claims 6-10 and 17-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Foster in view of Wong et al (US 6,319,655; hereinafter Wong) for reasons recited in page 10 of the office action. Applicants respectfully traverse this rejection on the following basis.

As discussed above, Foster does not disclose the present claims. Applicants submit that Wong also does not cure the deficiency in Foster to lead a person skilled in the art to come up with claims 6-10 and 17-21 of the present invention.

The prior art references or combination of references must teach or suggest all the limitations of the claims. Here, Foster in combination with Wong does not teach or suggest all the limitation of the present claims. Foster discloses a thermally curable polymer composition comprising a hydroxyl-containing polymer. Foster does not teach or suggest applicants' method of forming an underlayer for bi-layer resist film comprising, *inter alia*, beam irradiating the blended or prepared material coated on the substrate, as in applicants' amended claims 1 and 13.

Wong simply does not cure the deficiency in Foster, as Wong discloses a monolayer of a chemically amplified resist (CAR) film, and not the underlayer of a bilayer resist film, as in amended claims 1 and 13.

Further, Wong discloses irradiating the photoresist film with a high energy beam, e.g., 193nm, to generate acid (H⁺), which reacts with the polymer, and then irradiating the image areas of the photosensitive composition to sufficient electron beam radiation to thereby increase the resistance of the photosensitive composition in the image areas to an etchant. Therefore,

Wong discloses the use of UV radiation only to pattern the CAR film and the use of e-beam radiation only to treat the patterned CAR film, but not for forming the underlayer as in applicants' amended claims 1 and 13. Foster in view of Wong does not teach or suggest applicants' method of forming an underlayer for bi-layer resist film by, *inter alia*, beam irradiating the blended or prepared material coated on the substrate, as in applicants' amended claims 1 and 13. Further, applicants submit that claims 6 and 10, and 17 and 21, which depend on base claims 1 and 13 respectively, are also patentable over Foster in view of Wong.

Accordingly, applicants respectfully request reconsideration and withdrawal of the rejection to claims 6, 10, 17 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Foster in view of Wong.

Conclusion:

For the foregoing reasons, the present application, including claims 1-6, 10-17 and 21-33, is believed to be in condition for allowance. The Examiner's early and favorable action is respectfully requested. The Examiner is invited to contact the undersigned if he has any questions or comments in this matter.

Respectfully submitted,



Bernard Lau
Reg. No. 38,218
Attorney for Applicants

F. Chau & Associates, LLC
130 Woodbury Road
Woodbury, NY 11797
Tel: (516) 692-8888
Fax: (516) 692-8889